

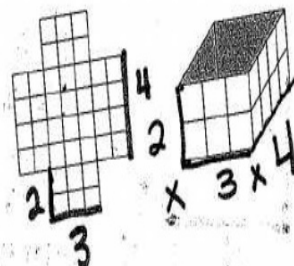
# How Many Cubes? (page 1 of 2)

How many cubes fit in each box? First, determine the number of cubes without building the box. Then build a box and use cubes to check. Check your first answer with your actual answer before going on to the next box.

Think about a way you could find the number of cubes that would fit in any box without building it.

$$l \times w \times h = v$$

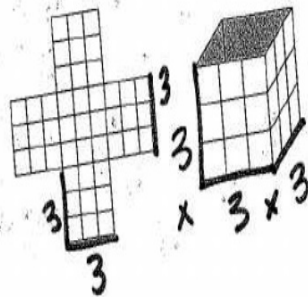
1. Box 1



| First Answer                    | Actual Answer |
|---------------------------------|---------------|
| $2 \times 3 \times 4 = v$       |               |
| $6 \times 4 = 24 \text{ cubes}$ |               |

30 24 cubes  
Ethan

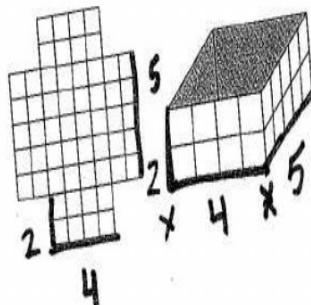
2. Box 2



|                                 |  |
|---------------------------------|--|
| $3 \times 3 \times 3 = v$       |  |
| $9 \times 3 = 27 \text{ cubes}$ |  |

60 27 cubes  
Andrew

3. Box 3



|                                 |  |
|---------------------------------|--|
| $2 \times 4 \times 5 = v$       |  |
| $8 \times 5 = 40 \text{ cubes}$ |  |

35 40 cubes  
Guy



Name \_\_\_\_\_

Date \_\_\_\_\_

## Prisms and Pyramids

$l \times w \times h = V$   
**How Many Cubes?** (page 2 of 2)

4.

|   | Pattern | Box | First Answer  | Actual Answer      |
|---|---------|-----|---|--------------------|
| $\begin{array}{r} 3 \\ 18 \\ \times 3 \\ \hline 54 \end{array}$ |         |     | $3 \times 6 \times 3 = V$<br>$18 \times 3 = V$<br>$\underline{24}$<br>Annabelle | $54 \text{ cubes}$ |

5.

|   |  |  |                    |
|---|--|--|--------------------|
| $\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$ |  | $3 \times 4 \times 4 = V$<br>$12 \times 4 = 48 \text{ cubes}$<br>$\underline{24}$<br>Delaney | $48 \text{ cubes}$ |
|---|--|--|--------------------|

6. The bottom of the box is 4 units by 5 units. The box is 3 units high.

|   |  |  |                    |
|---|--|--|--------------------|
| $\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$ |  | $4 \times 5 \times 3 = V$<br>$20 \times 3 = 60 \text{ cubes}$<br>$\underline{25}$<br>megan | $60 \text{ cubes}$ |
|---|--|--|--------------------|



Name \_\_\_\_\_

Date \_\_\_\_\_

Prisms and Pyramids

## A Strategy for Finding Volume

Describe a way to find how many cubes will fit in a rectangular box without building the box and filling it with cubes. Your method should work for any box, whether you start with a box pattern, a picture of the box, or a description of the box in words.



Name \_\_\_\_\_

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Prisms and Pyramids

Daily Practice

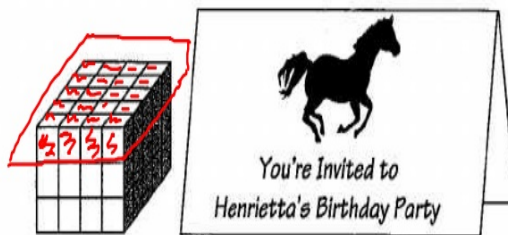


## Will They Fit?

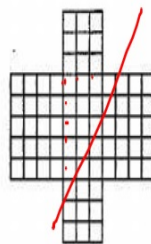
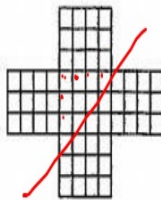
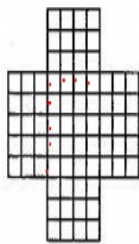
These sugar cubes are Amy's birthday gift to her horse, Henrietta.

**NOTE** Students figure out which of three box patterns to use for packaging some sugar cubes. Students should show the sugar cubes with blocks or other cubes if they have difficulty answering the questions.

SMH 106-107



1. How many sugar cubes are in the top layer? \_\_\_\_\_
2. How many layers of sugar cubes are there? \_\_\_\_\_
3. How many sugar cubes are there in all? \_\_\_\_\_
4. Which of these patterns should Amy use to make a box for the sugar cubes?



## Ongoing Review

5. My number is less than 32. My number is a multiple of 3. The digits of my number add up to 6. What is my number?

A. 150

B. 42

C. 24

D. 18



Name \_\_\_\_\_

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Prisms and Pyramids

Homework



## Multiplication Practice

Solve each problem in two different ways.  
Show your work clearly.

NOTE Students develop flexibility while solving multiplication problems.

SMH 30-32

1.

$27 \times 62 = \underline{\hspace{2cm}}$

First way:  $\times$

$$\begin{array}{r} 27 \\ \times 62 \\ \hline 54 \\ 1620 \\ \hline 1674 \end{array}$$

Second way:

|    |      |    |
|----|------|----|
| 20 | 7    |    |
| 60 | 1200 | 0  |
| 2  | 40   | 14 |

$$\begin{array}{r} 1200 \\ 420 \\ 40 \\ + 14 \\ \hline 1674 \end{array}$$

2.

$54 \times 48 = \underline{\hspace{2cm}}$

First way:

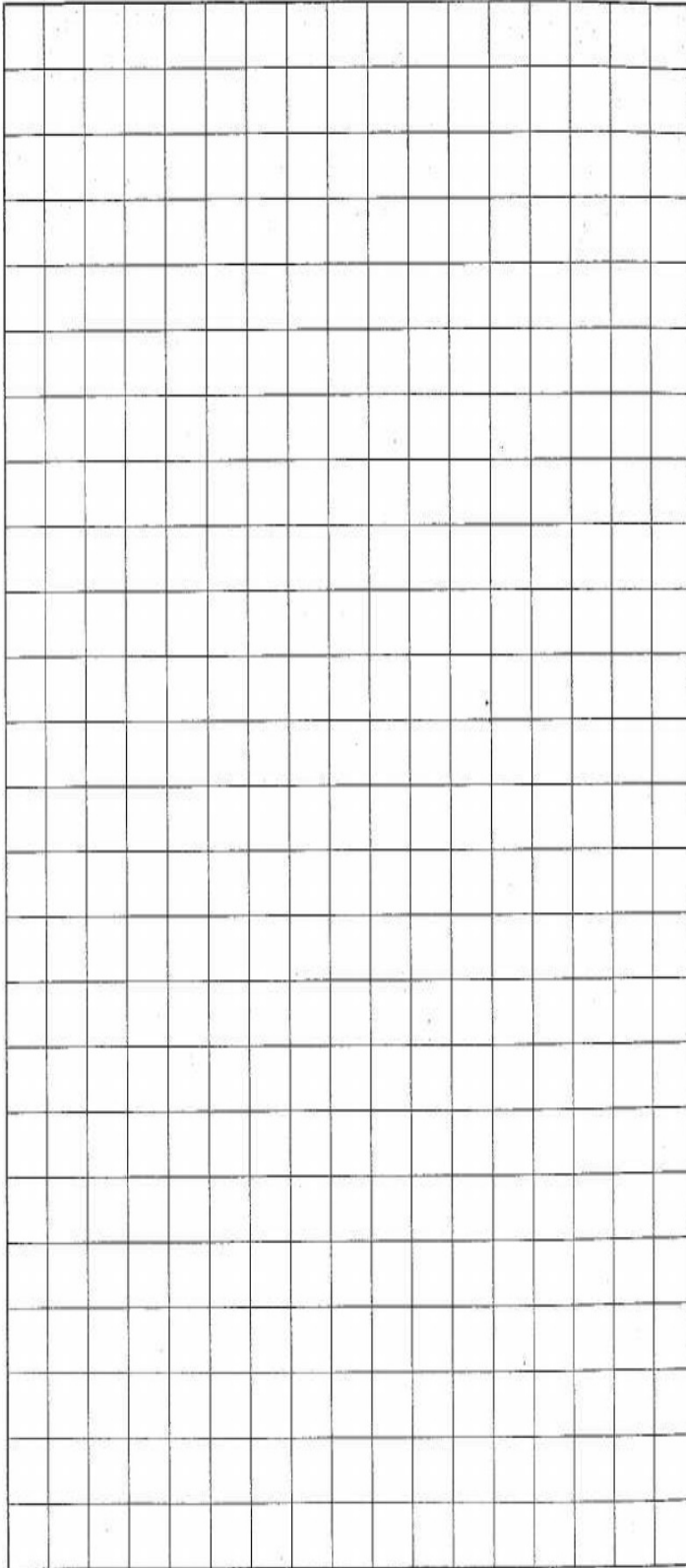
$$\begin{array}{r} 54 \\ \times 48 \\ \hline 432 \\ + 2160 \\ \hline 2592 \end{array}$$

Second way:

|    |      |     |
|----|------|-----|
| 50 | 4    |     |
| 40 | 2000 | 160 |
| 8  | 400  | 32  |

$$\begin{array}{r} 2000 \\ 1600 \\ 400 \\ + 32 \\ \hline 2592 \end{array}$$







Name \_\_\_\_\_

Date 11/2/10

Prisms and Pyramids

# Can I find the Volume of Boxes?

(page 1 of 2)

What is the volume (the number of cubes that fit) of each box? Determine the number of cubes first, and then build the box and use cubes to check.

Pattern

Picture

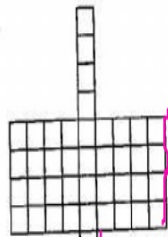
First Answer

Actual Answer

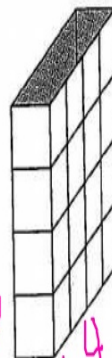
$$1 \times 4 \times 4 = V$$

$$4 \times 4 = 16$$

$$V = 16$$



$$1 \times 4 \times 4$$



$$4 \times 1 \times 4$$

25

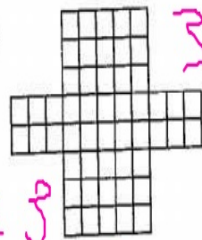
16 cubes

$$2 \times 3 \times 5 = V$$

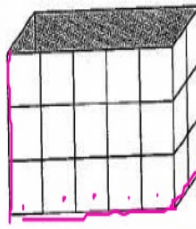
$$6 \times 5 = V$$

$$30 = V$$

2.



$$2 \times 3 \times 5$$



$$3 \times 2 \times 5$$

30

30 cubes



Name \_\_\_\_\_

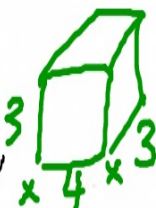
Date \_\_\_\_\_

## Prisms and Pyramids

**Volume of Boxes** (page 2 of 2)

For Problems 3–5, draw the pattern of the box on three-quarter-inch grid paper.

3. 3 by 4 by 3



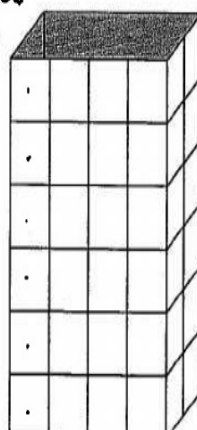
$3 \times 4 \times 3 = V$   
 $12 \times 3 = V$   
 $36 = V$   
 cubes

First  
Answer

Actual  
Answer

36  
cubes

4.



$6 \times 4 \times 2 = V$   
 $24 \times 2 = V$   
 $48$   
 cubes = V


6

4

2

48  
cubes

5. The bottom of the box is 5 units by 6 units. The box is 2 units high.



$5 \times 6 \times 2 = V$   
 $30 \times 2 = V$   
 $60$   
 cubes = V

2

5

6

60 cubes



Name \_\_\_\_\_

Date \_\_\_\_\_

Prisms and Pyramids

Daily Practice



## What Should We Do with the Extras?

**NOTE** Students practice solving division problems and interpreting remainders in story contexts.

SMH 37

Solve each of the following problems. Show your work clearly. Be sure to answer the question posed by the story context.

1. Alicia and her father went food shopping. Oranges were priced at \$0.27 each. Alicia and her father have \$5.00. How many oranges can they buy?

Division Equation:  $\$5.00 \div \$0.27 = 18 \text{ R } 14$

Answer: 18 oranges

$$\begin{array}{r} 18 \overline{) 5.00} \\ \underline{54} \phantom{00} \\ 20 \phantom{00} \\ \underline{54} \phantom{00} \\ 16 \phantom{00} \\ \underline{54} \phantom{00} \\ 14 \phantom{00} \end{array}$$

2. Milk cartons come in crates of 24. How many crates does a school need to order to serve milk to 400 students?

Division Equation:  $400 \div 24 = 16 \text{ R } 16$

Answer: 17 crates

$$\begin{array}{r} 16 \overline{) 400} \\ \underline{384} \phantom{00} \\ 16 \phantom{00} \end{array}$$

3. Sixteen people are going to share 200 crackers evenly. How many crackers does each person get?

Division Equation: \_\_\_\_\_  $\div$  \_\_\_\_\_ = \_\_\_\_\_

Answer: \_\_\_\_\_



Name \_\_\_\_\_

Date 11/4/10

Prisms and Pyramids

Homework

NOTE Students determine how many cubes fit in each of the pictured boxes.

SMH 106-107

# \* write equations

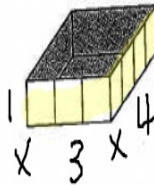
## More Boxes

1. How many cubes will fit?

$$1 \times 3 \times 4 = V$$

$$3 \times 4 = V$$

$$12 \text{ cubes} = V$$



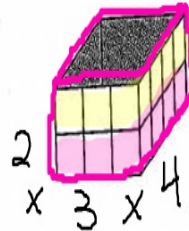
equation →

2. How many cubes will fit?

$$2 \times 3 \times 4 = V$$

$$6 \times 4 = V$$

$$24 \text{ cubes} = V$$



$$12 \times 2 = 24 \text{ cubes}$$

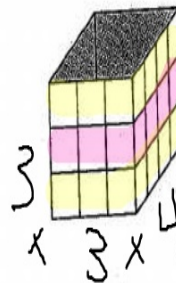
3. How many cubes will fit?

$$3 \times 3 \times 4 = V$$

$$9 \times 4 = V$$

$$36 = V$$

cubes



$$\begin{array}{r} = 12 > 24 \\ = 12 \\ \hline = 12 + 12 \end{array}$$

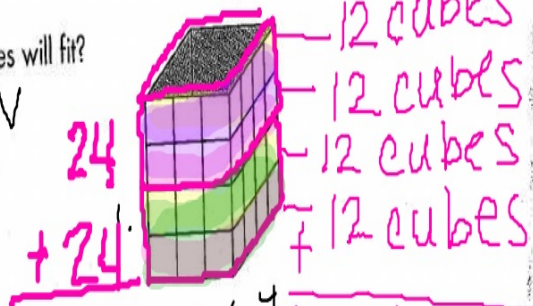
$$36 \text{ cubes} \quad 36 \text{ cubes}$$

4. How many cubes will fit?

$$4 \times 3 \times 4 = V$$

$$12 \times 4 = V$$

$$48 \text{ cubes} = V$$



$$\begin{array}{r} 24 \\ + 24 \\ \hline 48 \text{ cubes} \end{array}$$

$$48 \text{ cubes}$$



Name

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Prisms and Pyramids

Can I

double

**Doubling the Number of Cubes?**

Answer these questions. Use grid paper, cubes, and anything else that helps you solve the problem.

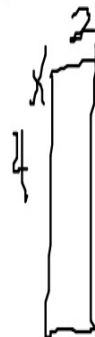
1. You have a box that is 2 by 3 by 5. How many cubes does it hold? How do you know?

It has 30 cubes.

I know because  $2 \times 3 \times 5 = V$   
and  $2 \times 3 = 6$  and  $6 \times 5 = 30$ .



dimensions  
 $2 \times 3 \times 5$



2. The factory wants you to build a box that will hold twice as many cubes. What are the dimensions of a box that contains two times as many cubes as a box that is 2 by 3 by 5? Write the dimensions and explain how you found the answer.

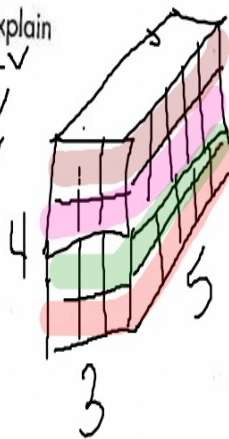
$$4 \times 3 \times 5 = V$$

$$12 \times 5 = V$$

$$60 = V$$

$$2 \times 6 \times 5$$

$$2 \times 3 \times 10$$

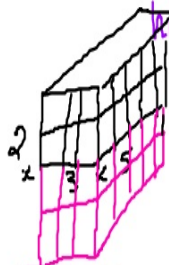


3. Draw the design for the new box below or on graph paper.

**challenge:** See how many boxes you can find that will hold two times as many cubes as a 2 by 3 by 5 box. Record each of the dimensions.



Can I add a layer to 11/5/10  
double the number of cubes a box  
holds?



$$2 \times 3 \times 5 = 30$$

$$4 \times 3 \times 5 = 60$$

$$(2 \times 3 \times 5) \times 2$$

$$(6 \times 5) \times 2$$

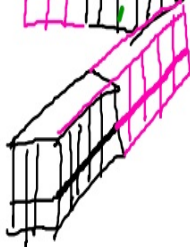
$$(30) \times 2$$

$$= 60$$



$$2 \times 3 \times 5 = 30$$

$$2 \times 6 \times 5 = 60$$



$$2 \times 3 \times 5 = 30$$

$$2 \times 3 \times 10 = 60$$

~